

=====

Sequence Listing was accepted.

If you need help call the Patent Electronic Business Center at (866)
217-9197 (toll free).

Reviewer: Durreshwar Anjum

Timestamp: [year=2008; month=10; day=21; hr=14; min=42; sec=49; ms=539;
]

=====

Application No: 10552571 Version No: 2.0

Input Set:

Output Set:

Started: 2008-09-19 09:30:22.365
Finished: 2008-09-19 09:30:27.057
Elapsed: 0 hr(s) 0 min(s) 4 sec(s) 692 ms
Total Warnings: 6
Total Errors: 0
No. of SeqIDs Defined: 28
Actual SeqID Count: 28

Error code	Error Description
W 402	Undefined organism found in <213> in SEQ ID (3)
W 402	Undefined organism found in <213> in SEQ ID (14)
W 402	Undefined organism found in <213> in SEQ ID (21)
W 402	Undefined organism found in <213> in SEQ ID (25)
W 213	Artificial or Unknown found in <213> in SEQ ID (27)
W 213	Artificial or Unknown found in <213> in SEQ ID (28)

SEQUENCE LISTING

<110> Glaxo Group Limited

<120> New Process

<130> PB60213

<140> 10552571

<141> 2008-09-19

<150> WO2004/092389

<151> 2004-04-14

<160> 28

<170> FastSEQ for Windows Version 4.0

<210> 1

<211> 1314

<212> DNA

<213> Streptomyces Clavuligerus

<400> 1

```

atgttccacc cggctcctgcc cggggggcgc gaggaccgca ccgttctggt ctccggccgc 60
ggctgcaccg tacgggacac cgaagggcgc acctatctcg acgcctcgtc ggtgctcgga 120
ctgaccacaga tcggccatgg acgtgaggag atcgcgcagg ccgccgccga gcagatgcgg 180
aactcgggtc acttccacac ctggggcacc atcagcaacg acaaggccat ccgactggcc 240
gcgcgccctca ccgacctggc gccccagggt ctccagcgcg tctacttcac cagcggcggc 300
ggcgaggggcg tcgagatcgc cctgcgcgtg gcccgttact tccaccaccg caccggcagc 360
ccggagcgca cctggatctt gtcgcgcgc accgcctacc acggcatcgg ctacggcagc 420
ggtacgggtgt cgggctcgcc cgcctaccag gacgggttcg gcccggtgct gccccatgtg 480
caccacctca cgcgcgccga cccgtaccac gccgagctgt acgacggcga ggacgtcacg 540
gagtactgcc tgcgcgaact cgcgcgcacc atcgacgaga tcggccccgg gcggatcgcc 600
gcgatgatcg gggagccggt catgggcgcg ggcggcgcg tcgtcccgcc gccggactac 660
tgccgcgcg tcgcgcgct gctgcgtcc cacggcatcc tgctgacct ggacgagtc 720
gtcaccgcgt tcggccgcac ggggacctgg ttcgcggccg agcacttcgg ggtgacccc 780
gatctgctgg tgaccgcgaa gggcatcacc tccgggtatg tccgcacgg ggcggtgctc 840
ctgaccgagg aggtcgcgga cgcctgaac ggggagacgg ggttcccgat cggcttcacc 900
tataccggtc accccacggc gtgcgcgct gcgctcgca atctcgacat catcgaacgg 960
gaagggctgc tggagaacgc ggtgaagggt ggcgaccacc tcgcggggcg gctggcggcc 1020
ctgcgcgggc tgccgcgct gggggacgtc cggcaactgg gcatgatgct cgcgctcgag 1080
ctggtgtcgg acaagacggc ccgcaccccg ctgcggggcg gcaccctcgg ggtcgtggac 1140
gcgctgcgcg aggacgcggg cgtcatcgtc cgggccacgc cgcgctccct ggtcctcaat 1200
ccggcgctcg tgatggaccg ggccacggcg gacgaggtgg cggacgggct ggactcggtg 1260
ctgcggcggc tggcaccgca cgggcggatc ggcgcgccc cccggcgggg gtga 1314

```

<210> 2

<211> 2464

<212> DNA

<213> Streptomyces Clavuligerus

<400> 2

```

gtgtacgagt gcagcgatga ggttcgtcac gacgtccccg gcctgccggg tccgtcaccg 60

```

```

tccatcacccg tccctgggctg tctggggcgta cgcgccgacg gccggaaact ggagctgggc 120
cctcccgctc agcggggccgt tttcgccctg ctgctcatca acgcgggcag tgttgtgccg 180
gtcgactcga tcgtcttccg tatctggggc aactcaccac cgggcgcggt caccgcgacg 240
ctccagtcct atgtgtcccg gctgcggaaa ctcttgccg agtgtgtgct cccggacggt 300
tcgacacccg aactgctgca ccagccgccg ggctacaccc tcgcgctcgg caccgagcac 360
atcgacgcga accgttttga gcaggccatc aggacagggc gccggctctc gcgcgaggag 420
cagcaccagg aggcgcgggc cgtgctctgc caggccctgc tgagctgggg cgggacaccg 480
tacgaggagc tgagcgcgta cgacttcgcc gtccaggagg ccaatcggtt ggagcagctc 540
cggctgggcg ccgtggagac atgggcgcac tgctgtctgc ggctggggcg ggacgaggag 600
gtgatggacc agctcaagcc ggaggtgcag cgcaatccgc tcggggagcg gctgatcggg 660
cagctcatgc aggcgcagta ccggtcgggg tgccaggcgg acgcgctcag gacgtacgag 720
gcgacgcggc gggccctggc cgaggagctg gggaccgatc cgggcaagga gctggcggcg 780
ctgcacgcgg cgatcctgcg tcaggacaac ggtctggacc gcgtcgtccc ggcgtccgcg 840
ccgccgtcgg cgggggtcgg gcggggggcc gtgacggtgt cggctccggc acagcggctc 900
aggccgttga cgcggccggt ggcggggcgg gcgcgggtcc cgggggcgat gacggtggcg 960
gcgggcgcgg ggggggcccc cgcgtccgcc tccggtccg tttccgcgtc cgtttccggc 1020
tccggctccg gctccggctc cgtcctgcg tcggttccca cctctttcc cggctccgtt 1080
tctggctcgg cgtccgttgc cgcgtccgta gccgcgcccg tttccggcca tgtctccggg 1140
cccgggtccg ctttcgggtc cgtggcgctc caccggccgc agaccctccg gggcgagccg 1200
gtccacgggg gcgcgcagg gatgcgcacc gggcagggtg tccccacgct gccgccgttc 1260
gtcggggcgg gcgacgagct gcgcggctct ctggagtccg cgacgtccgc gttccacacc 1320
tcggggcggg tggcgttctg cgtcggcgag gcgggcagcg gcaagacccg gctcctctcc 1380
gagttggagc gctcggttcc ggacagtgtg cgcaccgtct gggcgtcctg ttcggagagt 1440
gaggaccggc ccgactactg gccgtggacg accgtgctgc ggcactctga cgcgatgtgg 1500
ccggaacgta tgcacggatt ccccggttgg ctgcggcgcg cactcgcgga actgcttccc 1560
gaggtggggc cggagccaca ggggcgcgac tcccccgacg ggggcgagga gaacagcggc 1620
aacggggacg gtgcgggcca cggggacagc accccggcgc acaccctcac gctcgcgccc 1680
gctctcgcgc ccccgcgctc cagagaggct cgtttcacc tgcacgacgc cgtgtgccag 1740
gcgcttctgc gcacggtccg cgaacccgtg gtgatcatgc tggaggacat ggagcgggcc 1800
gacgccccct cgctcgccct gctgcgcctc ctggtggagc aactgcgcac cgtccccctg 1860
ctgctcgtgg tcaccacgcg caccctccgg ctgcgcacg acgccgagct gcgacgggcc 1920
gccgccgtga tctccagtc gaccggcgcg cgcggggtcc tgctgaacgc cctggacgca 1980
cgggccaccg gggaactcgc cggagggatg ctgggcaagg ccccgacac cctcctcgta 2040
cgggccctgc acgagcgctc cgcggggaac ccgtacttcc tcgtccagct cctccgctcg 2100
ctccggcagg ggctcgcgc cgcctgggag acggagatcc cggacgagct ggccggggtc 2160
gtgctgcaac ggctgtcgag cgtgcgcgcc gccgtgcgcc ggggtgctcg catctgcgcg 2220
gtcgtggagc gcagttgcga acggcggtg atcgagaccg tgctgcgcca tgagggaatc 2280
ccgctggaga acgtccgtac ggcgggtccg ggcggctctg tggaggaga ccccgacgac 2340
cccgggcggc tgaggttctg gcacccgctg gtccgggagg ccgtctggga cgacctggag 2400
aacaccgctc ggcccgctc vmargtccg ttcctccgcg ctccgggcgc tggccacggt 2460
ctga

```

<210> 3

<211> 437

<212> PRT

<213> Streptomyces1 clavuligerus

<400> 3

```

Met Phe His Pro Val Leu Pro Arg Gly Arg Glu Asp Arg Thr Val Leu
 1             5             10            15
Val Ser Gly Arg Gly Cys Thr Val Arg Asp Thr Glu Gly Arg Thr Tyr
             20             25            30
Leu Asp Ala Ser Ser Val Leu Gly Leu Thr Gln Ile Gly His Gly Arg
             35             40            45
Glu Glu Ile Ala Gln Ala Ala Ala Glu Gln Met Arg Thr Leu Gly His
             50             55            60
Phe His Thr Trp Gly Thr Ile Ser Asn Asp Lys Ala Ile Arg Leu Ala

```

65		70		75		80
Ala Arg Leu Thr Asp	Leu Ala Pro Gln Gly Leu Gln Arg Val Tyr Phe					
	85		90		95	
Thr Ser Gly Gly Gly	Glu Gly Val Glu Ile Ala Leu Arg Met Ala Arg					
	100		105		110	
Tyr Phe His His Arg	Thr Gly Ser Pro Glu Arg Thr Trp Ile Leu Ser					
	115		120		125	
Arg Arg Thr Ala Tyr	His Gly Ile Gly Tyr Gly Ser Gly Thr Val Ser					
	130		135		140	
Gly Ser Pro Ala Tyr	Gln Asp Gly Phe Gly Pro Val Leu Pro His Val					
	145		150		155	
His His Leu Thr Pro	Pro Asp Pro Tyr His Ala Glu Leu Tyr Asp Gly					
	165		170		175	
Glu Asp Val Thr Glu	Tyr Cys Leu Arg Glu Leu Ala Arg Thr Ile Asp					
	180		185		190	
Glu Ile Gly Pro Gly	Arg Ile Ala Ala Met Ile Gly Glu Pro Val Met					
	195		200		205	
Gly Ala Gly Gly Ala	Val Val Pro Pro Pro Asp Tyr Trp Pro Arg Val					
	210		215		220	
Ala Ala Leu Leu Arg	Ser His Gly Ile Leu Leu Ile Leu Asp Glu Val					
	225		230		235	
Val Thr Ala Phe Gly	Arg Thr Gly Thr Trp Phe Ala Ala Glu His Phe					
	245		250		255	
Gly Val Thr Pro Asp	Leu Leu Val Thr Ala Lys Gly Ile Thr Ser Gly					
	260		265		270	
Tyr Val Pro His Gly	Ala Val Leu Leu Thr Glu Glu Val Ala Asp Ala					
	275		280		285	
Val Asn Gly Glu Thr	Gly Phe Pro Ile Gly Phe Thr Tyr Thr Gly His					
	290		295		300	
Pro Thr Ala Cys Ala	Val Ala Leu Ala Asn Leu Asp Ile Ile Glu Arg					
	305		310		315	
Glu Gly Leu Leu Glu	Asn Ala Val Lys Val Gly Asp His Leu Ala Gly					
	325		330		335	
Arg Leu Ala Ala Leu	Arg Gly Leu Pro Ala Val Gly Asp Val Arg Gln					
	340		345		350	
Leu Gly Met Met Leu	Ala Val Glu Leu Val Ser Asp Lys Thr Ala Arg					
	355		360		365	
Thr Pro Leu Pro Gly	Gly Thr Leu Gly Val Val Asp Ala Leu Arg Glu					
	370		375		380	
Asp Ala Gly Val Ile	Val Arg Ala Thr Pro Arg Ser Leu Val Leu Asn					
	385		390		395	
Pro Ala Leu Val Met	Asp Arg Ala Thr Ala Asp Glu Val Ala Asp Gly					
	405		410		415	
Leu Asp Ser Val Leu	Arg Arg Leu Ala Pro Asp Gly Arg Ile Gly Ala					
	420		425		430	
Ala Pro Arg Arg Gly						
	435					

<210> 4

<211> 818

<212> PRT

<213> Streptomyces Clavuligerus

<400> 4

Val Tyr Glu Cys Ser Asp	Glu Val Arg His Asp Val Pro Gly Leu Pro
1	5 10 15

Gly	Pro	Ser	Pro	Ser	Ile	Thr	Val	Leu	Gly	Cys	Leu	Gly	Val	Arg	Ala		
			20					25					30				
Asp	Gly	Arg	Lys	Leu	Glu	Leu	Gly	Pro	Pro	Arg	Gln	Arg	Ala	Val	Phe		
		35					40					45					
Ala	Leu	Leu	Leu	Ile	Asn	Ala	Gly	Ser	Val	Val	Pro	Val	Asp	Ser	Ile		
	50					55					60						
Val	Phe	Arg	Ile	Trp	Gly	Asn	Ser	Pro	Pro	Gly	Ala	Val	Thr	Ala	Thr		
65					70					75					80		
Leu	Gln	Ser	Tyr	Val	Ser	Arg	Leu	Arg	Lys	Leu	Leu	Ala	Glu	Cys	Val		
			85						90					95			
Leu	Pro	Asp	Gly	Ser	Thr	Pro	Glu	Leu	Leu	His	Gln	Pro	Pro	Gly	Tyr		
		100						105					110				
Thr	Leu	Ala	Leu	Gly	Thr	Glu	His	Ile	Asp	Ala	Asn	Arg	Phe	Glu	Gln		
	115						120					125					
Ala	Ile	Arg	Thr	Gly	Arg	Arg	Leu	Ser	Arg	Glu	Glu	Gln	His	Gln	Glu		
	130					135					140						
Ala	Arg	Ala	Val	Leu	Cys	Gln	Ala	Leu	Leu	Ser	Trp	Gly	Gly	Thr	Pro		
145					150					155					160		
Tyr	Glu	Glu	Leu	Ser	Ala	Tyr	Asp	Phe	Ala	Val	Gln	Glu	Ala	Asn	Arg		
			165						170					175			
Leu	Glu	Gln	Leu	Arg	Leu	Gly	Ala	Val	Glu	Thr	Trp	Ala	His	Cys	Cys		
		180						185					190				
Leu	Arg	Leu	Gly	Arg	Asp	Glu	Glu	Val	Met	Asp	Gln	Leu	Lys	Pro	Glu		
	195					200					205						
Val	Gln	Arg	Asn	Pro	Leu	Arg	Glu	Arg	Leu	Ile	Gly	Gln	Leu	Met	Gln		
	210					215					220						
Ala	Gln	Tyr	Arg	Leu	Gly	Cys	Gln	Ala	Asp	Ala	Leu	Arg	Thr	Tyr	Glu		
225					230				235						240		
Ala	Thr	Arg	Arg	Ala	Leu	Ala	Glu	Glu	Leu	Gly	Thr	Asp	Pro	Gly	Lys		
			245						250					255			
Glu	Leu	Ala	Ala	Leu	His	Ala	Ala	Ile	Leu	Arg	Gln	Asp	Asn	Gly	Leu		
		260						265					270				
Asp	Arg	Val	Val	Pro	Ala	Ser	Ala	Pro	Pro	Ser	Ala	Gly	Val	Gly	Arg		
	275						280					285					
Gly	Ala	Val	Thr	Val	Ser	Val	Pro	Ala	Gln	Arg	Ser	Arg	Pro	Leu	Thr		
	290					295					300						
Arg	Pro	Val	Ala	Gly	Arg	Ala	Arg	Val	Pro	Gly	Ala	Met	Thr	Val	Ala		
305					310					315					320		
Ala	Gly	Ala	Gly	Ala	Ala	Pro	Ala	Ser	Ala	Ser	Gly	Ser	Val	Ser	Ala		
			325						330					335			
Ser	Val	Ser	Gly	Ser	Gly	Ser	Gly	Ser	Gly	Ser	Ala	Pro	Ala	Ser	Val		
		340						345				350					
Pro	Thr	Phe	Phe	Pro	Gly	Ser	Val	Ser	Gly	Ser	Ala	Ser	Val	Ala	Ala		
	355					360						365					
Ser	Val	Ala	Ala	Pro	Val	Ser	Gly	His	Val	Ser	Gly	Pro	Gly	Ser	Ala		
	370					375					380						
Phe	Gly	Ser	Val	Ala	Leu	His	Arg	Pro	Gln	Thr	Leu	Arg	Gly	Glu	Pro		
385					390				395						400		
Val	His	Gly	Gly	Ala	Gln	Gly	Met	Arg	Thr	Gly	Gln	Val	Phe	Pro	Thr		
			405						410					415			
Leu	Pro	Pro	Phe	Val	Gly	Arg	Gly	Asp	Glu	Leu	Arg	Gly	Leu	Leu	Glu		
		420						425					430				
Ser	Ala	Thr	Ser	Ala	Phe	His	Thr	Ser	Gly	Arg	Val	Ala	Phe	Val	Val		
		435					440					445					
Gly	Glu	Ala	Gly	Ser	Gly	Lys	Thr	Arg	Leu	Leu	Ser	Glu	Leu	Glu	Arg		
	450					455					460						
Ser	Val	Pro	Asp	Ser	Val	Arg	Thr	Val	Trp	Ala	Ser	Cys	Ser	Glu	Ser		

465		470		475		480
Glu Asp Arg Pro Asp Tyr Trp Pro Trp Thr Thr Val Leu Arg His Leu						
	485		490		495	
Tyr Ala Met Trp Pro Glu Arg Met His Gly Phe Pro Gly Trp Leu Arg						
	500		505		510	
Arg Ala Leu Ala Glu Leu Leu Pro Glu Val Gly Pro Glu Pro Gln Gly						
	515		520		525	
Pro His Ser Pro Asp Gly Gly Glu Glu Asn Ser Gly Asn Gly Asp Gly						
	530		535		540	
Ala Gly Asp Gly Asp Ser Thr Pro Ala His Thr Leu Thr Leu Ala Pro						
545		550		555		560
Ala Leu Ala Pro Pro Arg Ser Arg Glu Ala Arg Phe Thr Leu His Asp						
	565		570		575	
Ala Val Cys Gln Ala Leu Leu Arg Thr Val Arg Glu Pro Val Val Ile						
	580		585		590	
Met Leu Glu Asp Met Glu Arg Ala Asp Ala Pro Ser Leu Ala Leu Leu						
	595		600		605	
Arg Leu Leu Val Glu Gln Leu Arg Thr Val Pro Leu Leu Leu Val Val						
	610		615		620	
Thr Thr Arg Thr Phe Arg Leu Ala His Asp Ala Glu Leu Arg Arg Ala						
625		630		635		640
Ala Ala Val Ile Leu Gln Ser Thr Gly Ala Arg Arg Val Leu Leu Asn						
	645		650		655	
Ala Leu Asp Ala Arg Ala Thr Gly Glu Leu Ala Gly Gly Met Leu Gly						
	660		665		670	
Lys Ala Pro Asp Thr Leu Leu Val Arg Ala Leu His Glu Arg Ser Ala						
	675		680		685	
Gly Asn Pro Tyr Phe Leu Val Gln Leu Leu Arg Ser Leu Arg Gln Gly						
	690		695		700	
Leu Ala Ala Ala Trp Glu Thr Glu Ile Pro Asp Glu Leu Ala Gly Val						
705		710		715		720
Val Leu Gln Arg Leu Ser Ser Val Pro Pro Ala Val Arg Arg Val Leu						
	725		730		735	
Asp Ile Cys Ala Val Val Glu Arg Ser Cys Glu Arg Arg Val Ile Glu						
	740		745		750	
Thr Val Leu Arg His Glu Gly Ile Pro Leu Glu Asn Val Arg Thr Ala						
	755		760		765	
Val Arg Gly Gly Leu Leu Glu Glu Asp Pro Asp Asp Pro Gly Arg Leu						
	770		775		780	
Arg Phe Val His Pro Leu Val Arg Glu Ala Val Trp Asp Asp Leu Glu						
785		790		795		800
Asn Thr Arg Arg Pro Val Ser Arg Ser Ser Ala Leu Gly Ala Leu Ala						
	805		810		815	
Thr Val						

<210> 5

<211> 1330

<212> DNA

<213> Streptomyces Clavuligerus

<400> 5

```

gtgcccggt cggactcga agcactggac cgtgccaccc tcatccaccc caccctctcc 60
ggaaacaccg cggaacggat cgtgctgacc tcggggtcgg gcagccgggt ccgcgacacc 120
gacggccggg agtacctgga cgcgagcgcc gtccctcggg tgaccaggt gggccacggc 180
cgggcccggc tggcccgggt cgcggccgag cagatggccc ggctggagta cttccacacc 240

```

tgggggacga	tcagcaacga	ccgggcggtg	gagctggcgg	cacggctggt	ggggctgagc	300
ccggagccgc	tgacccgcgt	ctacttcacc	agcggcgggg	ccgagggcaa	cgagatcgcc	360
ctgcg gatgg	cccggtctta	ccaccaccgg	cgcggggagt	ccgcccgtae	ctggatactc	420
tcccgccggt	cggcctacca	cggcgctcga	tacggcagcg	gcggcgtcac	cggcttcccc	480
gcctaccacc	agggcttcgg	cccctccctc	ccggacgtcg	acttcctgac	cccgccgcag	540
ccctaccgcc	gggagctggt	cgccgggttc	gacgtcaccg	acttctgcct	cgccgaactg	600
cgcgagacca	tcgaccggat	cgccccggag	cggatcgcgg	cgatgatcgg	cgagccgatc	660
atgggcgcgg	tcgggcgcgc	ggccccgcgc	gccgactact	ggccccgggt	cgccgagctg	720
ctgcactcct	acggcatcct	gctgatctcc	gacgaggtga	tcacggggta	cgggcgcacc	780
gggcactggt	tcgcgcgcga	ccacttcggc	gtggtcccg	acatcatggt	caccgccaaag	840
ggcattcacc	tcgggggtatg	tgccgcacgg	cgccgtcctg	accaccgagg	ccgtcgccga	900
cgaggctcgt	ggcgaccagg	gcttcccggc	gggcttcacc	tacagcggcc	atgccacggc	960
ctgcgcggtg	gccctggcca	acctggacat	catcgagcgc	gagaatctgc	tcgacaacgc	1020
cagcaccgtc	ggcgctacc	tgggcaaacg	cctggccgag	ctgagcgatc	tgccgatcgt	1080
cggggacgtc	cggcagaccg	gtctgatgct	cgggtgcgaa	ctggtcgccg	accgcggaac	1140
ccgggagccg	ctgcggggcg	ccgcgcgtcg	cgaggccctg	cgcgagcggg	cgggcatcct	1200
gctgcgcgcc	aacggcaacg	ccctcatcgt	caaccccccg	ctgatcttca	cccaggaaga	1260
cgcgcacgaa	ctcgtggcgg	gcctgcgctc	cgtactcgcc	cgcaccaggc	cggacggccg	1320
ggtgctctga						1330

<210> 6

<211> 3345

<212> DNA

<213> *Streptomyces clavuligerus*

<400> 6

atgaagtacg	acataacccc	accatccggc	cttcgggttcg	acctcctcgg	cccgttgacc	60
gtgaccgcgc	gcgagcaacc	cgtggacctg	ggcgcgccac	ggcagcgcgc	cctgctcgcc	120
ctgctgctca	tcgatgtcgg	caacgtggtc	ccgctgcggg	tcagaccgcg	gtcgatctgg	180
ggggccgacc	caccgtcccg	ggtccggggg	acgctccagg	cttatgtgtc	ccgactgcgg	240
aaactcctgc	accgccatga	ccgttccttt	cgccttgctc	accagctcca	ggggatatctc	300
ctcgaagtgg	attcggcgaa	ggtggacgcc	gtggttttctg	agacacgtgt	cagggagtgc	360
cggaattga	gcagggcccg					